

Amendments to the Specification

(1) At page 1, line 5, please change "TECHNICAL FIELD" to --BACKGROUND OF THE INVENTION--.

(2) At page 1, line 17, please delete "BACKGROUND ART".

(3) Please replace the paragraph bridging pages 1 and 2 with the following amended paragraph.

--A holding device for adjusting the position of an optical element through automatic control has been disclosed (refer to patent publication 1). The holding device includes an inner ring for holding the peripheral edge of a ~~movable~~ lens, and an outer ring arranged outside the inner ring connected to the inner ring. The outer ring includes an actuator. Displacement of the actuator is transmitted to the inner ring by a displacement enlargement mechanism so as to displace the ~~movable~~ lens. A sensor is attached to the outer ring to monitor the position of the ~~movable~~ lens. A barrel including the holding device is relatively compact.--

(4) Please replace the paragraph beginning at page 2, line 35, with the following amended paragraph:

-- The space surrounded by the jacket accommodates a signal communication coated cable, which is connected to the sensor, and a power feeding coated cable, which is connected to the actuator. The coated cables may generate a subtle amount of chemical pollutants (outgas), such as organic substances. The space surrounded by the jacket is connected to the inner space of the barrel through the gap described above. The subtle amount of chemical pollutants generated by the coated cables may flow from the space surrounded by the jacket into the inner space of the barrel through the gap described above, and may absorb the exposure light or ~~for the lenses~~ cause loss of transparency of the lenses accommodated in the barrel.--

(5) At page 3, line 13, please change “DISCLOSURE OF THE INVENTION” to --BRIEF SUMMARY OF THE INVENTION--.

(6) Please replace 13 paragraphs starting from page 4, line 9 to page 7, line 12 with the following amended paragraphs.

--One embodiment further includes a driving member, attached to the frame member, ~~for generating and configured to generate~~ the driving force, wherein the driving member urges the displacement portion in a direction intersecting with the optical axis of the optical element. In this case, since the driving member is mounted on the frame member, the internal structure of the frame member is simple.

In one embodiment, the driving member includes a driving element and a housing, connected to the displacement portion, ~~for accommodating and configured to accommodate~~ the driving element. The housing includes a coupling portion ~~for transmitting~~ configured to transmit a driving force generated by the driving element to the displacement portion. In this case, the driving force applied from the outside of the frame member is transmitted to the displacement portion via the housing.

In one embodiment, the driving member includes a rough adjustment mechanism ~~for roughly adjusting~~ that roughly adjusts the position of the holding member, and a fine movement mechanism ~~for finely adjusting~~ that finely adjusts the position of the holding member. This structure enables rough adjustment and fine adjustment of the position of the displacement portion to be performed accurately and quickly.

In one embodiment, the fine movement mechanism includes a piezoelectric element. The piezoelectric element is easily controlled, has a quick response, and generates a strong and stable driving force. Thus, the piezoelectric element is suitable for use in adjusting the attitude of the optical element.

One embodiment further includes a guiding portion ~~for guiding~~ configured to guide the displacement portion in a manner that the displacement portion is displaced in a limited direction. This structure enables the holding member ~~for holding~~ that holds the optical element to move accurately.

One embodiment further includes an urging member, arranged between the displacement portion and the frame member, ~~for urging~~ configured to urge the displacement portion toward the frame member. This structure enables the attitude of the optical element to be controlled in a manner accurately following the displacement of the displacement portion.

In one embodiment, the transmission portion is a rod having one end, connected to the holding member in a manner rotatable and tiltable in any direction, and another end, connected to the displacement portion in a manner rotatable and tiltable in any direction. The one end and the other end of the rod are connected by an axis tilted relative to a direction in which the displacement portion is displaced. This structure enables part of the holding member to be moved parallel to the optical axis of the optical element by displacing the displacement portion within the plane orthogonal to the optical axis of the optical element.

In one embodiment, the displacement portion is one of three displacement portions that are arranged on the frame member, and the transmission portion is one of three transmission portions associated with the displacement portions, with each transmission portion including two rods connected to the associated displacement portion. This structure enables the optical element to be kinematically supported.

One embodiment further includes a vibration attenuating mechanism, arranged between the frame member and the displacement portion, ~~for attenuating~~ configured to attenuate vibration of the displacement portion generated by the driving force. In this case, the attitude of the optical element is adjusted appropriately without the transmission portion and the holding member receiving stress.

In one embodiment, the vibration attenuating mechanism includes a friction member fixed to one of the frame member and the displacement portion and slidably contacting the other one of the frame member and the displacement portion. In this case, the simple structure effectively attenuates vibrations.

In one embodiment, at least two of the frame member, the displacement portion, the guide portion, and the transmission portion are monolithically formed as a single structure body. For example, the single structure body is formed through engraving machining and

includes a connecting portion connecting the at least two of the frame member, the displacement portion, the guide portion, and the transmission portion to one another. The plurality of components are formed integrally. As a result, the number of components decreases, the structure becomes simple, the relative positions of parts are accurately determined, unnecessary stress is not generated, and the rigidity of the structure becomes high.

One embodiment further includes a displacement detection mechanism having a detector arranged inside the frame member ~~for detecting~~ configured to detect displacement of the holding member, and a monitoring portion arranged outside the frame member ~~for monitoring~~ configured to monitor a detection result of the detector from outside the frame member. The monitoring portion enables the detection result to be read while maintaining the hermetic state of the frame member. In this case, the displacement of the holding member may be understood without disturbing the purge atmosphere inside a barrel.

One embodiment further includes a seal ~~for isolating~~ configured to isolate an inner space of the frame member from the outer side of the frame member and hermetically sealing the inner space of the frame member. In this case, the holding device maintains a high-level purge atmosphere formed inside a barrel without particularly using a cover for covering the barrel.--

(7) At page 8, line 14, please change “BEST MODE FOR CARRYING OUT THE INVENTION” to --DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS--

(8) Please replace the paragraph beginning at page 16, line 20, with the following amended paragraph:

-- Further, a displacement amount (distance) by which the inner end portion of the transmission link portion 72 is displaced is larger than a displacement amount (distance) by which the outer end portion is displaced. In the present embodiment, ~~piezoelectric elements like~~ the piezoelectric elements 65 are used as drive sources. Each piezoelectric element 65 responds quickly to an applied voltage, and expands and contracts by a stable stroke (displacement amount). Each piezoelectric element 65 also exhibits an extremely large driving force. Such piezoelectric elements 65 are suitable for controlling the positions and

the attitudes of the optical elements 37. However, the expanding and contracting stroke of the piezoelectric element 65 is typically small. The expanding and contracting stroke of the piezoelectric element 65 needs to be increased. The deviation angle described above has the function of converting the expanding and contracting direction of the piezoelectric element 65, and the function of increasing the expanding and contracting stroke of the piezoelectric element 65 to a sufficiently high level to control the position of the optical element 37.--